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THE ROLE
OF THE RIVER RHINE
IN THE FORMATION
OF SPATIAL STRUCTURE
OF THE ECONOMY
OF EUROPEAN COUNTRIES
(1st CENTURY BC —
19th CENTURY AD)

A. S. Grazhdankin*



This article considers the main historical stages of formation of spatial economic structure of the European countries, parts of whose territories lie within the Rhine basin. The analysis covers a protracted chronological interval from the Roman colonization until the beginning of the 20th century. The author emphasizes the role of the River Rhine in the course of territorial structure formation.

This study aims to retrace the historical sequence of the formation of territorial structure of economies of the Rhine basin countries. The research and practical significance of the work lies in the identification of the periods of increased activity in the formation of spatial structural communications of the states mentioned. The author applies the historical-descriptive approach and cartographical-geographical modelling to identify the main stages of this process.

The author arrives at the following conclusions. The beginning of the formation of spatial structure of economies of the Rhine basin countries dates back to the Roman period of the history of European states rather than the industrial revolution. Similarly, it is possible to assume that primitive integration processes started to develop in the region in the same period. Throughout history, the River Rhine has served as the central axis for economic structure development. The practical significance of the article lies in identifying the early — previously insufficiently studied — stages of formation of territorial economic structure in the historical and geographical context.

Key words: River Rhine, spatial structure of the economy, Rhine region, structural context

The Rheine is called in Europe not other than *Vaterrhein* (in German). Indeed, such a 'high status' can be proved by its influence on the European economies in different historical periods. That was due to the cross-border nature of the waterway which crosses

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the territories of six countries (Switzerland, Liechtenstein, Austria, France, Germany, the Netherlands), and taking into account the tributaries, Luxembourg and a part of Belgium are also in the 'zone of influence'. Thus, we have a whole territorial entity which can be singled out as a separate Rhine region.

The above-listed states are some of the world's economic centres, and their today's spatial economy set-up is a result of the long historical process which has lasted for several hundred years.

The beginning of the formation of the spatial economic structure in the Rhine basin should be associated with the expansion of the boundaries of the Roman Empire, when in the 1st century BC the Romans conquered a large territory including Gaul (modern France) and the western bank of the Rhine, home to the Celts and ancient Germans.

When the Romans came to the Rhine region, it stirred up economic development. First, new cities were developed, the centres of social, economic, political and cultural life of Cologne (38 BC), Bonn (11 BC), Wiesbaden (77 AD), Worms (14 BC), Koblenz (55 BC), Constance (59 BC), Mainz (13 BC), Strasbourg (10 BC), Trier (16 BC), Basel (15 BC). (Fig. 1). In fact, all those cities were strongholds performing the defensive function, and the Rhine was used as Limes (border) at the time of the Roman Empire.

Secondly, the Romans began to actively trade with the tribes living in the area under consideration. This fact has contributed not only to external relations but was essential for the development of a market economy. Thus, a network of land and waterways (including canals), ports, warehouses was arranged in the south of the today's Netherlands [1, p. 76]. According to historians, in Domburg, situated at the mouth of the Scheldt, there was a transport hub from which shuttle trips to the British Isles and the transportation to Cologne and Bordeaux were made.

After the fall of the Roman Empire (V c.), the Franks started to dominate in the region. An important event during their rule in the Rhine basin was a further development of trade; at the same time, the economic market structure, which had become extinct since the Roman presence, was recovered there. At that time it was subject to differentiation. Crafts and interregional trade were in the hands of specialists. Market areas were established in the parts of the Rhine region, which were subject to the Franks, on the banks of the Rhine, Meuse, Moselle used as transportation routes, at both the former Roman settlements (such as Maastricht in the central part of the Meuse basin, Cologne, Trier, Mainz and Duisburg on the Rhine) and the new (e. g. Dorestad, Deventer and Frankfurt).

Due to the intensification of trade, the Rhine through route, which was almost a direct continuation of the new axis of the world maritime trade, 'revived'. Down the Rhine — to the north — Eastern and Italian products were shipped, up the Rhine — to the south — the English tin, copper and wool, the Dutch cloth, German silver, weapons etc. were transhipped [9, p. 13]. The city of Cologne became the key centre of the Rhine trade in the 8th century, which could be explained by its favourable location at the intersection of the of the Rhine way and the western one (via the Rhine-Meuse way, in the midst of which there was Aachen, to Luttre (French Liege), Namur and Saint-Quentin, and from there to Paris) (Fig. 2).

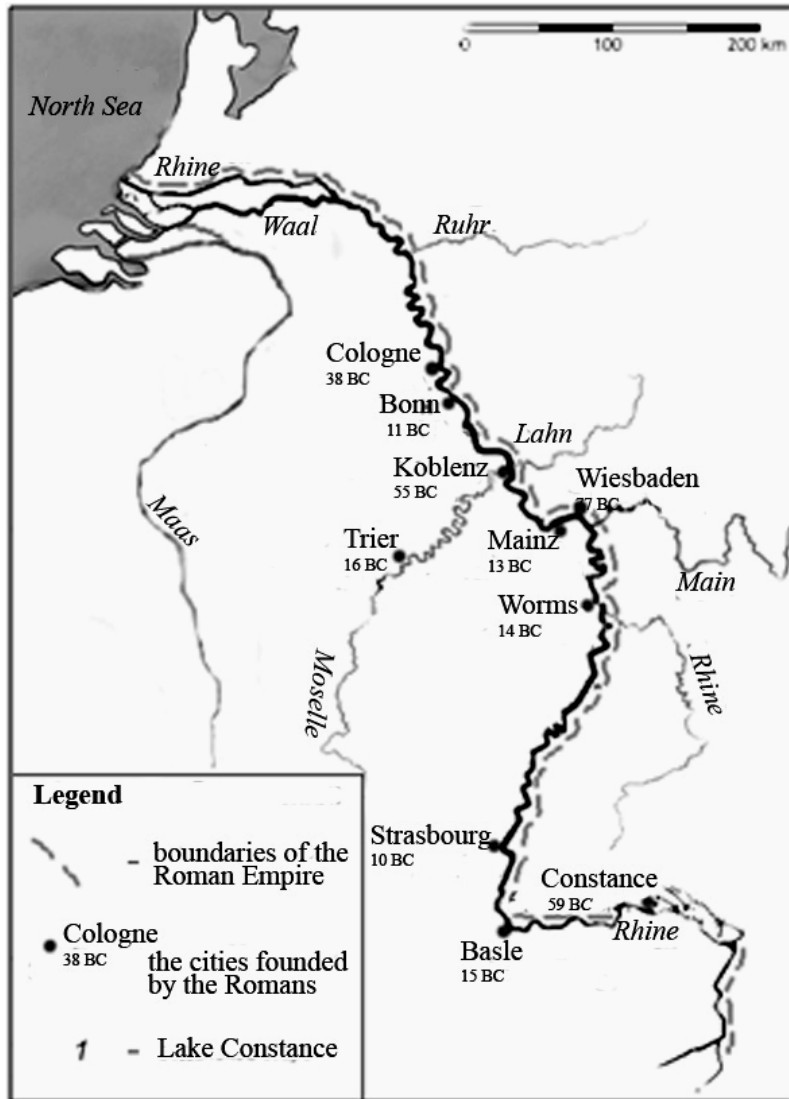


Fig. 1. Towns and cities founded in the Roman epoch

The Low Countries (i. e. the territory of the present Netherlands and the north-eastern part of Belgium) achieved the greatest prosperity during the Franks in the Rhine region, largely due to their unique geographical position.

By the 10th century, the Frankish state disappeared from the map of Europe. But, in the apt words of M. A. Sludkovskaya, '400 years of the Frankish state provided the background for most of the modern western European countries' [7, p. 19]. From the 10th to 15th centuries, the production increased in the Rhine region because of the establishment of new craft centres and towns. The establishment of the Hanseatic trade union was a major development.

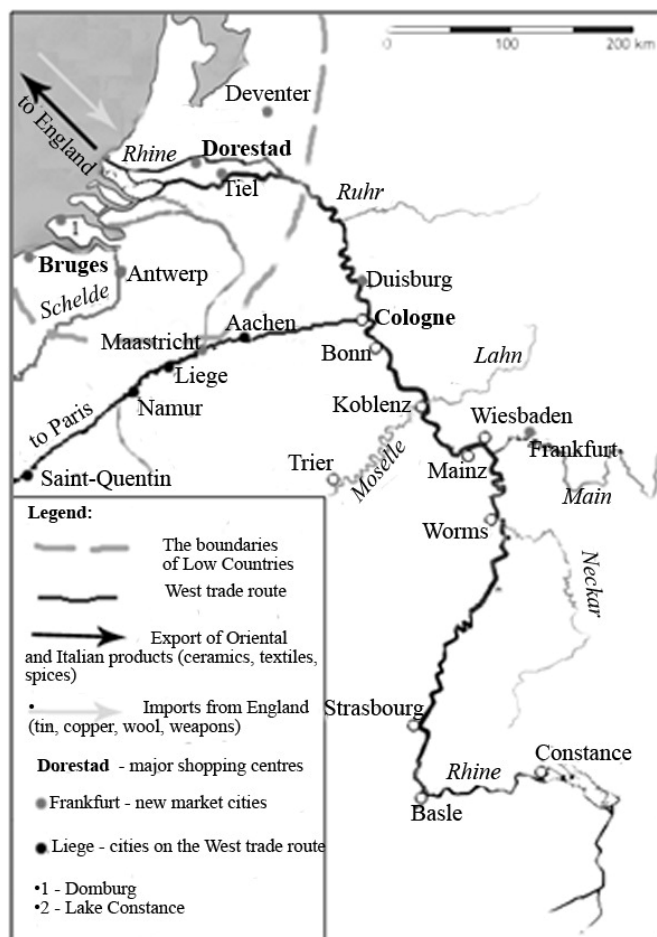


Fig. 2. The spatial pattern of the economy with the Franks

The establishment of the specially developed handicraft centres is quite specific, the geographical position often depended not on the proximity to the sources of raw materials but the conditions of the community-based production, existence in the area of a community with a privilege to purchase raw materials and sell products, and availability of skilled labour [5, p. 135]. For that reason, for example in Flanders (the largest area of the medieval cloth production) mainly the imported wool was used. A peak in the development in the Rhine region was reached in the following craft areas: mining and blacksmithing, cloth production and shipbuilding. Therefore, centres focusing on metal processing were established in the region (Solingen, Constance, Liege and Utrecht), as well as centres for the production of different tissues (Leiden, St. Gallen, Ravensburg and Amsterdam), and those specialising in the construction of cogs and barges (Hoorn). The output was mainly sold at the city markets, but at the same time trade fairs became more common in the 12th century. The best known and largest of those trade fairs were Zuzach in the Rhine region (Zurich), Frankfurt, Deventer, Nordlingen and beyond, Champagne (France), Linz and Lyon linked

by the land and river routes to the industrial centres of the Rhine basin. Fairs used to become a kind of stock exchanges which used to receive a lot of European and oriental goods. Trade fairs covered considerable distances. For example, the Frankfurt fair covered the territories of the today's Rhine basin (Fig. 3).

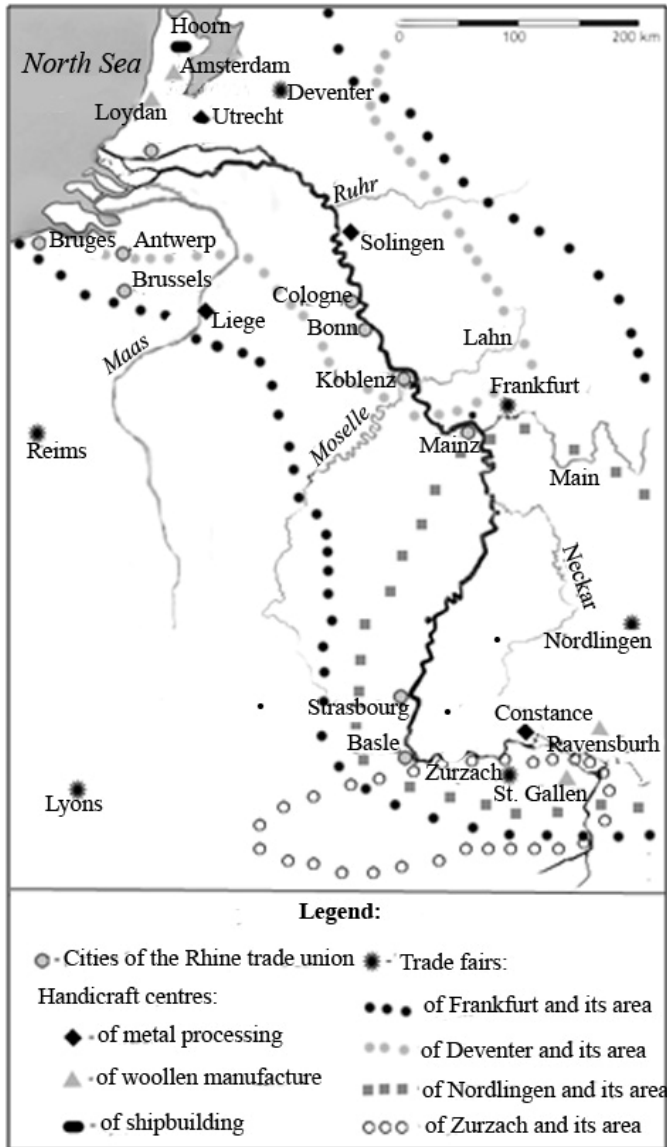


Fig. 3. Spatial pattern of the economy on the Rhine in the 10th—15th centuries

Since the trade in the Rhine region during that period was mainly of the continental character (with the exception of the coastal Low Countries), top priority was given to the rivers, mainly the Rhine. There were a lot of craft centres on its banks; therefore it was supposed to play a key role in the transportation of cargoes.

River transport was cheaper, more convenient and safe compared with land transportation which lacked a proper road network. In addition, the Rhine was the only meridian river route linking the Rhine region with Southern Europe (Italy) through the Alpine passes, and with Eastern Europe through the tributaries as well as France in the west. On top of that, the Hanseatic Trade Union established in the north of Europe (with about 200 cities mainly engaged in maritime trade in the Baltic and North Seas), due to the Rhine, could strengthen its continental influence which resulted in the establishment of the Rhine trade union, uniting 70 cities in the area from the Low Countries to Basel. By the way, this trade union can be considered the first integration organisation that promoted the gradual convergence of economic, cultural and political ties between the European states.

In the late Middle Ages (16th-17th centuries), not only the general economic but also the political situation became more complicated in the Rhine region. A negative factor which affected the further formation of the spatial structure of the economy at that time may be considered the discovery of new trade routes to the New World and India by the Portuguese and Spaniards. That event led to a decline in economic prosperity of the Rhine region, as trade gradually moved from the continent to the sea. The Rhine, Rhone and several other rivers turned from the world trade highways to 'rural' roads [9, p. 22]. The industrial and manufacturing centres located in the upper and middle reaches of the Rhine were forgotten. Against this background, Holland was in an advantageous position. It was the first European country which chose the capitalist path of development and began to play the advanced roles not only in the Rhine region but also throughout Europe. According to V. E. Motylev, in 'Northern Netherlands, there was a significant development of shipbuilding, navigation, fishing, wool linen, industry and commerce' [4, p. 49]. The main centres of industry and commerce were Amsterdam, Rotterdam, Leiden, Utrecht, Enkhuizen and Edam.

The 18th century in Europe was characterised by the transition to the capitalist relations and the beginning of the industrial revolution. Moreover, the first attempts of industrial developments in the Rhine region of two major coal basins, the Ruhr and the Saar, and iron Lorraine were made. But the amount of coal and iron ore produced was worthless at the time due to the lack of proper technical equipment and, as a result, no deep mining. Despite that, the region experienced a significant progress towards building industrial capacities. Thus, at the end of the 18th century the cloth industry manufactures mostly receiving wool from England became common. In Westphalia iron industries started to gradually revive (after the severe consequences of the Thirty Years' War), and the production of yarn and linen fabric was spread. The southern part of the Rhine basin was dominated by the agrarian economy. The main product exported to the north, to England and the Netherlands, was the bread delivered along the Rhine. The greatest industrial growth in that period was observed in France, largely due to the development of light industry (silk, wool and other fabrics) and the opening of textile manufactures (Strasbourg, Lyon). The production of iron in Alsace (Niederbronn) increased too.

In the 19th century the establishment of the spatial pattern of the economy in the Rhine region was at an active phase. There were several reasons for that. First, from that period the countries in the basin of the river Rhine started experiencing a real industrial boom (Germany, France, and Belgium). Secondly, a rapid development of natural resources began (the Ruhr and Saar coal basins, and the Lorraine iron ore basin), which led to the concentration of population and industry in the production areas, and therefore agglomerations were developed. Thirdly, hydraulic dredging and bed leveling of the Rhine near Basel were conducted (Switzerland), which allowed to increase the capacity of the river and made it the main water transport artery of Europe. Top priority was given to finding a solution to the transport problems among these reasons, because it helped to ensure internal and external connections for the countries in the region and stimulated the development of industrial production. The solution to this problem was twofold. The first one was to establish channels, and the second one – to build railways. The first activity concerned the major water project on straightening the upper bed of the Rhine. As a result, the Rhine was navigable from Basel to Rotterdam with the outlet into the North Sea. The second major project was the opening of the Ludwig canal in 1846 (in German *Ludwigskanal*), or of the Main — Danube canal connecting the Rhine to the Danube. In addition to the implementation of these two major projects, the Rhine was connected by canals with the Rhone and Marne.

The rapidly growing countries such as Germany, Belgium, Netherlands, France, Austria and Switzerland were engaged in the construction of railways in the second half of the 19th century in the region. The pace of construction was so great that by 1890 there had been almost no items not ‘woven’ in the region’s rail network.

The era of industrialisation established upon resolving the transport problems and the beginning of the industrial revolution in the Rhine basin. In Germany, the Rhine-Westphalia region became the ‘driving force of development’. A powerful steel and chemical industry emerged on the basis of the Ruhr coal basin. Steel mills and chemical plants were built and the population grew in the mining areas. A rapid development of natural resources — the key factor of the region’s rapid development — was due to the relative ease of production [8, p. 145]. It should also be added that the Ruhr had a very favourable transport and geographical position in the vicinity of the Rhine River, with which it was connected through the right tributaries of the Lippe and Ruhr, and it used to facilitate the transportation of coal and metal. The most dynamic cities in the Ruhr area were Duisburg, Essen (a coal mining centre), Dortmund, Bochum, Bottrop and Herne.

The Saar coal basin at the border of France and Germany, with Saarbruecken being the centre, was another link which accumulated the productive forces in the Rhine region. Therefore, Germany established its own engineering and chemical industries working on the basis of by-products of the coal and steel industries, usually for the military purposes. The successful recovery of the area, like in the Ruhr, was driven by the favourable transport and geographic position in the Rhine Valley with access to its shores through

the canal Marne — Rhine to the river port of Strasbourg, as well as along the Saar and Moselle to Koblenz.

The steel industry was launched nearby, smelting of iron and steel production in the Lorraine iron-ore deposits. Nearby in Alsace, cotton mills equipped with tens of thousands of spinning machines were created in the city of Mulhouse. The part included in the Rhine region in Belgium developed metallurgy, and therefore the chemical industry on the basis of the Southern coal-field in Wallonia (opened in the 18th century). The development of the coal and iron ore mines was also affected by the distribution of the population in the region. Industry at the time required a significant number of workers; thus, people gradually began to come along to form a concentric ring of settlements around the main centers of production in the area of production (raw materials were considered to be a key factor in the settlement at the time). For example, the city of Longview was the metallurgical centre in the Lorraine, and some settlements were formed around (later some towns focusing on the steel production too) Thionville, Brice, Ayanzh (Fig. 4). Thus, the first agglomerations began to rise, under which A. Weber understands the ‘clusters’ and ‘concentrations’ of industrial production at a place’ [2, p. 87].

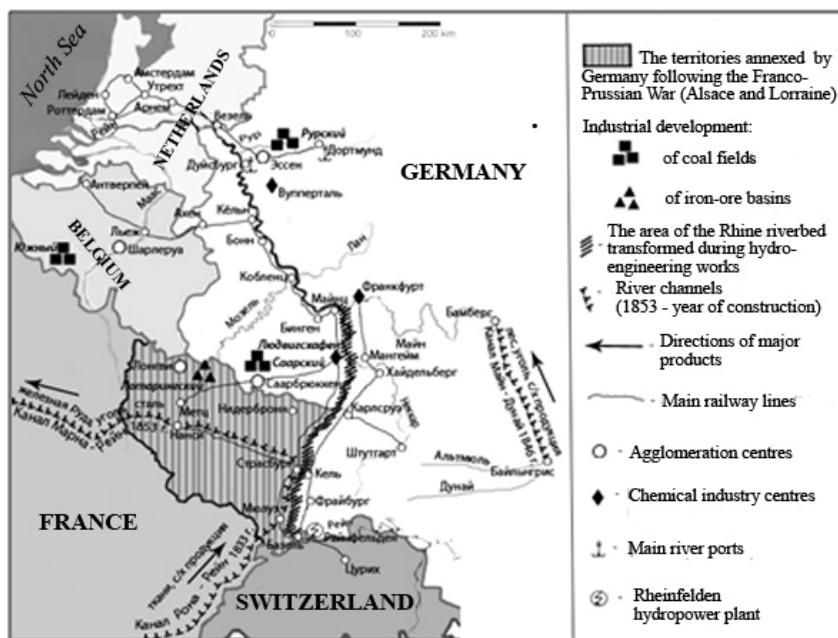


Fig. 4. The spatial structure of the economy on the Rhine at the end of the 19th century

Against the background of the swift development of railway transport, the economy of the Rhine did not recede in importance. Since the second half of the 19th century, following the hydraulic engineering works there was a significant increase in traffic on the Rhine in spite of the solid competition from the railways. Two factors contributed to that process:

1) growth of foreign trade, and the cost of waterborne transportation of the main cargoes was lower;

2) a significant increase in passenger traffic through the development of shipping and the transport of citizens between major cities and towns, most of which were on the river banks. On top of that, at the end of the 19th century the Rhine was in the focus of attention due to the development of hydropower in its upper reaches. In 1880 in Rheinfelden, Switzerland the first hydroelectric power plant was built (one of the oldest in the world).

The study of history of the spatial structure of the economy of the Rhineland Europe suggests the following:

- First, the establishment of the current spatial economic structure of the Rhineland in Europe at the end of the 19th century was the result of a long historical process which originated from the time of the Roman colonisation;

- Second, the role of the Rhine was very prominent in the formation as it acts not only as the main water transport artery, but a kind of economic development axis along which a 'skeleton' of settlement and industrial centres was established;

- Thirdly, by the end of the 19th century in the Rhine countries in Europe there was already a strong economic core, around which there was a constant spatial convergence; this fact suggests a possible start of the integration processes in the Rhine region which then spread across Europe.

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